



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER OF PATENTS AND TRADEMARKS  
Washington, D.C. 20231  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/643,550	08/22/2000	Shanna D. Knights	12547US02	9685

7590 01/15/2002

Robert W Fieseler  
McAndrews Held & Malloy Ltd  
500 West Madison Street  
34th Floor  
Chicago, IL 60661

EXAMINER

WILLS, MONIQUE M

ART UNIT	PAPER NUMBER
----------	--------------

1745

DATE MAILED: 01/15/2002

7

Please find below and/or attached an Office communication concerning this application or proceeding.

MF-7

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	09/643,550	KNIGHTS ET AL	
	<b>Examiner</b>	<b>Art Unit</b>	
	Wills M Monique	1745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 22 August 2000.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-42 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-11, 13, 14, 20-22, 24-29 and 31-42 is/are rejected.
- 7) ☒ Claim(s) 12, 15-19, 23 and 30 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                             | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____  |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                    | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____                                    |

## **DETAILED ACTION**

### ***Information Disclosure Statement***

The information disclosure statement(s) filed 1/29/01 and 8/16/01 has/have been received and complies with the provisions of 37 CFR 1.97, 1.98 and MPEP § 609 .

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 7-19 & 29-30 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The term "valve" is of uncertain meaning and renders the claim vague and indefinite. The specification, at page 10 lines 1-10, exemplifies titanium oxide as a type of "valve" metal. However, this exemplification does not satisfactorily define what a "valve" metals are. Therefore, the examiner assumes metal oxides in Group IVA of the periodic table, such as zirconium oxide, qualifies as a "valve" metal.

### ***Claim Interpretation***

The examiner assumes metal oxides in Group IVA of the periodic table, such as zirconium oxide, qualifies as a "valve" metal.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

Claims 1, 3-11, 13, 14, 20-22, 33-34 & 40-42 are rejected under 35 U.S.C. 102(a) as being anticipated by Narayanan et al. U.S. Patent 5,945,231.

Narayanan teaches a solid polymer electrolyte fuel cell comprising an anode **120**, cathode **130** (fig. 1). The anode comprises a platinum/ruthenium alloy catalyst for evolving protons from a hydrogen fuel (col. 3 lines 30-35). The cathode comprises a Pt-RuO<sub>2</sub> Zeolite catalyst (col. 9 lines 25 & 26) or Pt-RuO<sub>2</sub>-ZrO<sub>2</sub> catalyst for evolving oxygen from water (col. 9 lines 35-45 & col. 10 lines 20-25). Each catalyst is supported by an electrically conductive carbon support (col. 5 lines 65-67).

The reference does not expressly disclose an improved tolerance to voltage reversal. However, it is reasonable to expect the reversal of Narayanan to inherently be improved because the fuel cell and materials employed are equivalent to that of the subject invention. Therefore, the instant claims are anticipated by Narayanan.

***Claim Rejections - 35 USC § 102***

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

Claims 1-3, 24 25, 28, 31-42 are rejected under 35 U.S.C. 102(e) as being anticipated by Narayanan et al. U.S. Patent 6,171,721 B1.

Narayanan teaches a method of making a solid polymer electrolyte fuel cell (col. 3 lines 60-68). The fuel cell contains an anode and cathode (col. 2 lines 35-60). The anode material contains a catalyst that is sputter-deposited as layers (col. 2 lines 55-60). The catalyst includes mixtures of two or more catalyst (col. 2 lines 50-55). The catalyst can be selected from platinum and ruthenium mixture (col. 65-68). The catalyst may be coated on carbon backing paper (col. 2 lines 35-40). Each catalyst may be coated as a mixture forming one layer or separate layers creating a bi-layer anode (col 5 lines 60-68 & col. 6 lines 1-8).

The reference does not expressly disclose an improved tolerance to voltage reversal. However, it is reasonable to expect the reversal of Narayanan to inherently be improved because the fuel cell and materials employed are equivalent to that of the subject invention. Therefore, the instant claims are anticipated by Narayanan.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 26,27 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Narayanan et al. U.S. Patent 6,171,721 B1, as applied to claim 1 and 3 above.

Narayanan teaches a method of making a solid polymer electrolyte fuel cell (col. 3 lines 60-68). The fuel cell contains an anode and cathode (col. 2 lines 35-60). The anode material contains a catalyst that is sputter-deposited as layers (col. 2 lines 55-60). The catalyst includes mixtures of two or more catalyst (col. 2 lines 50-55). The catalyst can be selected from platinum and ruthenium mixture (col. 65-68). The catalyst may be coated on carbon backing paper (col. 2 lines 35-40). Each catalyst may be coated as a mixture forming one layer or separate layers creating a bi-layer anode (col 5 lines 60-68 & col. 6 lines 1-8).

The reference does not expressly disclose a second catalyst composition supported on a second electrically conductive carbon support.

However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to employ an additional backing support to increase structural integrity of the electrode.

### ***Allowable Subject Matter***

Claims 12,15-19, 23 & 30 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The instant claims would be allowable over the prior art of record, because the prior art is silent to an anode having improved tolerance to voltage reversal comprising a first and second catalyst, wherein the second catalyst includes  $\text{RuO}_2/\text{IrO}_2$  (claim 12) or  $\text{RuO}_2/\text{TiO}_2$  (claims 15-19 & 23).

The prior art is also silent to a titanium oxide composition supported on a second electrically conductive carbon support (claim 30).

### ***Conclusions***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Muller U.S. Patent 4,348,268 teaches an electrode for electrolysis of water.

Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Monique Wills whose telephone number is (703) 305-0073. The Examiner can normally be reached on Monday-Friday from 8:30am to 5:00 pm.

Art Unit: 1745

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0661.

If attempts to reach Examiner by telephone are unsuccessful, the Examiner's supervisor, Gabrielle Brouillette, may be reached at 703-308-0756.

The unofficial fax number is (703) 305-3599. The Official fax number for non-final amendments is 703-872-9310. The Official fax number for after final amendments is 703-872-9311.

Mw,

1/10/02

  
GABRIELLE BROUILLETTE  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 1700